APPENDIX A
CLAIM SUPPORT IN
APPLICATION NO. 09/480,826

1. A surgical retractor comprising:	Figures 13-15 and 31-32.
a frame member;	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
first and second retractor blades coupled to the frame member, the retractor blades having retraction surfaces configured to engage an incision in a patient's body, wherein at least one of the first and second retractor blades is movable with respect to the frame member along a first axis to position the retractor blades toward or away from each other;	See, e.g., Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
a foot coupled to one of the frame member and the first and second blades, the foot having a support surface configured to engage a surface of a patient's body, wherein the foot is adjustable in a linear direction relative to the frame member and traverse to said first axis;	See, e.g., Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"

	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"

a locking mechanism for locking the foot and the frame member in a selected relative position along said axis which is transverse to the first axis; and	See, e.g., Page 25, lines 5-6: "The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"

an actuator for moving said at least one retractor blade with respect to the other retractor blade along the first axis.	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"

2. The retractor of claim 1, wherein the frame member comprises an elongated bar and the first and second retractor blades are respectively coupled to first and second arms coupled to the bar, one of said arms being movable with respect to the bar along the first axis, the foot being movable in the linear direction along an axis which is transverse to the first axis.	See, e.g., Figures 13-15 and 31-32;
	Page 24, lines 8-11: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120;"
	Page 24, line 13-Page 25, line 7: " Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145. Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 25, line 20-Page 26, line 2: "After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

Page 40, lines 1-19: "Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613.

A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"

Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs.

To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642.

The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 43, line 3-Page 44, line 21: "The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642. The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624. Further adjustment of an offset height of the superior blades 652 may be obtained by first loosening the moveable pivot lock 626 around the stem 646 of the blade arm 642 and then adjusting the adjustable offset drive screw 636 to cause the shoe 680 and the shoe arm 682 to rotate downwardly in a clockwise direction relative to the superior blade 652 and, thus, cause the blade 652 that is interconnected to the moveable pivot 624 to rise vertically until a desired offset is achieved. Alternatively, the blade arm 642 would remain fixed to the shoe arm 682 as the offset drive screw 636 is adjusted to cause the shoe 680 and shoe arm 682 to rotate downwardly in a clockwise direction. The clockwise rotation of the shoe 680 and shoe arm 682 causes the blade 652 to rotate upwardly in a clockwise direction;"

3. The retractor of claim 1, wherein the second blade is rotatable about a second axis which is transverse to the first axis, the foot being coupled to the second blade so that the foot and the second blade rotate together about the second axis.	See, e.g., Figures 31-32; Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 43, line 3-Page 44, line 21: "The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642. The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624. Further adjustment of an offset height of the superior blades 652 may be obtained by first loosening the moveable pivot lock 626 around the stem 646 of the blade arm 642 and then adjusting the adjustable offset drive screw 636 to cause the shoe 680 and the shoe arm 682 to rotate downwardly in a clockwise direction relative to the superior blade 652 and, thus, cause the blade 652 that is interconnected to the moveable pivot 624 to rise vertically until a desired offset is achieved. Alternatively, the blade arm 642 would remain fixed to the shoe arm 682 as the offset drive screw 636 is adjusted to cause the shoe 680 and shoe arm 682 to rotate downwardly in a clockwise direction. The clockwise rotation of the shoe 680 and shoe arm 682 causes the blade 652 to rotate upwardly in a clockwise direction;"

4. A method of retracting a portion of a patient's body to carry out a surgical procedure, the method comprising steps of:	See, e.g., Figures 13-15 and 31-32.
positioning first and second retractor blades against opposite sides of an incision formed in a patient's body, the first and second retractor blades being coupled to a frame member so as to be relatively movable toward or away from each other along a first axis; .	See, e.g., Page 24, line 8-Page 25, line 2: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126. Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
	Page 42, line 15-Page 43, line 2: " In operation, the blades 650 and 652 are inserted in an incision in the patient's chest such that the elongated vanes 656 and 657 of the blade 652 are positioned under the patient's ribs while the recessed throats 653 and 654 of the blades 650 and 652 are positioned to receive the ribs that are adjacent to the incision. After the blades 650 and 652 are properly positioned, the stem 644 of the blade arm 640 is inserted through the fixed pivot lock 615 into the socket 618 of the fixed pivot 616. Meanwhile, the stem 646 of the blade arm 642 is inserted through the moveable pivot lock 626 and the end of the shoe arm 682 opposite the shoe 680, and into the socket 625 of the moveable pivot 624. The blade 650 is then fixed in position by tightening the fixed pivot lock screw 617 to tighten the fixed pivot lock 615 around the stem 644 of the blade arm 640;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"

coupling at least one foot to the frame member so as to be adjustable with respect to the frame member in a linear direction along an axis which is transverse to the first axis, the foot having a support surface configured to rest against a surface of the patient's body adjacent the incision;	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 42, line 42-Page 43, line 4: "Meanwhile, the stem 646 of the blade arm 642 is inserted through the moveable pivot lock 626 and the end of the shoe arm 682 opposite the shoe 680, and into the socket 625 of the moveable pivot 624. The blade 650 is then fixed in position by tightening the fixed pivot lock screw 617 to tighten the fixed pivot lock 615 around the stem 644 of the blade arm 640. The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved;"
adjusting the relative position of the foot with respect to the frame member along said linear direction and fixing the foot in a position at which the support surface of the foot rests against the surface of the patient's body adjacent the incision; and	See, e.g., Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;".
imparting relative movement to the first and second blades to simultaneously move the blades apart along the first axis and lift one side of the incision with respect to the other side of the incision.	See, e.g., Page 25, line 20-Page 26, line 9: "After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs. When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"
	Page 43, lines 7-12: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624;"

5. A rib retractor for spreading apart first and second ribs to create and opening in the patient's chest, comprising:	See, e.g., Figures 13-15.
a frame;	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
a first blade coupled to the frame;	See, e.g., Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
a second blade coupled to the frame, the second blade being movable toward and away from the first blade, the second blade having a rotatable connector which permits rotation of the second blade relative to the frame;	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"

	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
an actuator for moving at least one of the first and second blades toward the other of the first and second blades;	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
a foot coupled to at least one of the frame and the first and second blades, the foot having a support surface configured to engage the surface of the patient's chest when lifting the second rib with the second blade; and	See, e.g., Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 26, lines 2-9: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"

a locking mechanism which selectively permits and prevents rotation of the rotatable connector, the locking mechanism being movable between a locked position, in which rotation of the rotatable connector is prevented, and an unlocked position, in which rotation of the rotatable connector is permitted, the locking mechanism being in the locked position for spreading the first and second ribs apart without lifting the second rib, the locking mechanism being in the unlocked position to permit rotation of the rotatable connector for spreading the first and second ribs apart and lifting the second rib.	See, e.g., Figures 13-15; The rack (132 and 133) and pinion (136 and 137) configuration inherently acts as a locking mechanism; Page 25, line 18-Page 26, line 9: In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs. When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"
6. The rib retractor of claim 5, wherein:	See, e.g., Figures 13-15.
the foot is linearly movable relative to the frame; and	See, e.g., Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
the rib retractor also comprises a locking mechanism selectively permitting and preventing linear movement of the foot relative to the frame.	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163."
7. The rib retractor of claim 5, wherein: the frame has a first arm and a second arm, the first blade being attached to the first arm and the second blade being attached to the second arm.	See, e.g., Figures 13-15

	See, e.g., Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
8. The rib retractor of claim 7, wherein: the frame includes an elongate bar, the first and second arms being mounted to the bar, the second arm being movable along the elongate bar toward and away from the first arm along a first axis.	See, e.g., Figures 13-15;
	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"

	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
9. The rib retractor of claim 5, wherein: the locking mechanism may be moved from the locked position to the unlocked without removing the first and second blades from the opening in the patient's chest.	See, e.g., Figures 13-15; The rack (132 and 133) and pinion (136 and 137) configuration inherently acts as a locking mechanism; Page 25, line 18-Page 26, line 9: In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs. When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"
10. A surgical retractor comprising:	See, e.g., Figures 1-2, 13-15, 22, 31-32 & 33-34.
a spreader member;	See, e.g., Page 14, line 22-Page 14, line 1: " Preferably, the access platform 10 comprises a pair of blades 50 and 51, a pair of support pads 80 and 81, a pair of tissue retractors 70 and 71, a pair of torsional members 30 and 31, and a spreader member 12;"
	Page 15, lines 6-12: "Referring to Figure 2, the components of the access platform 10 are shown less the tissue retractors 70 and 71. The spreader member 12 preferably comprises a rotatable hub 14 including operably coupled upper and lower hub halves 17 and 16. A pair of spreader arms 19 and 18 extend from the upper and lower hub halves 17 and 16, respectively, and connect to the torsional members 31 and 30, respectively. Preferably, the hub 14 includes a harmonic gear drive 20 used to rotate the upper hub half 17 relative to the lower hub half 16 and, thus, spread or close the spreader arms 18 and 19 to retract or relax the patient's ribs;"

	Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
	Page 44, line 16-Page 45, line 4: " A fifteenth embodiment of an access platform 700 of the present invention, as shown in Figures 33 and 34, comprises an elongated spreader housing 702 with a block and tackle type drive mechanism 970 located therein (see Figures 35-38 discussed in detail below). A lever 701 interconnected to the drive mechanism 970 extends upwardly from the spreader housing 702. A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706. The inferior blade 706 includes a tissue retractor 707 extending therefrom. A drive block 708 coupled to the drive mechanism 970 in the spreader housing 702, extends outwardly from the spreader housing 702 in a normal direction to the housing 702. As the lever 701 is rotated, the drive mechanism 970 slidably carries the drive block 708 along the drive slot 703 of the spreader housing 702."

first and second retractor blades coupled to the spreader member, wherein at least one of the first and second retractor blades is movable with respect to the spreader member along a first axis to position the retractor blades toward or away from each other;	See, e.g., Page 14, line 22-Page 14, line 1: " Preferably, the access platform 10 comprises a pair of blades 50 and 51, a pair of support pads 80 and 81, a pair of tissue retractors 70 and 71, a pair of torsional members 30 and 31, and a spreader member 12;"
	Page 16, lines 9-22: "Referring to Figure 2, the blades 50 and 51 preferably include elongated vanes 52 and 53, which slide beneath a plurality of the patient's ribs, and recessed arcuate throats 54 and 55 that receive the patient's ribs that are adjacent to the chest incision. The benefits of the recessed throats 54 and 55 and the elongated vanes 52 and 53 will be discussed below with regard to the operation of the access platform 10. Blade arms 56 and 57 interconnect the blades 50 and 51 to the rest of the access platform 10. The blade arms 56 and 57 comprise stems 62 and 63 received in sockets 34 and 35 in torque bases 32 and 33. The sockets 34 and 35 and the stems 62 and 63 are constructed such that the blade arms 56 and 57 are releasably connected to the torque bases 32 and 33. The stems 62 and 63, which extend relatively horizontally from the torque bases 32 and 33, include pivot sections 60 and 61 extending therefrom. Branches 58 and 59 extend outwardly and downwardly away from the pivot sections 60 and 61 and are attached to the throats 54 and 55 of the blades 50 and 51. This blade arm construction advantageously directs the bulk of the access platform 10 away from the surgeon's working area;"
	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"

Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"

	Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
a shoe coupled to one of the spreader member and the first and second blades, the shoe having a support surface configured to engage a surface of a patient's body, wherein the shoe is adjustable relative to the spreader member in a manner which is transverse to said first axis;	See, e.g., Page 14, line 22-Page 14, line 1: " Preferably, the access platform 10 comprises a pair of blades 50 and 51, a pair of support pads 80 and 81, a pair of tissue retractors 70 and 71, a pair of torsional members 30 and 31, and a spreader member 12;"
	Page 17, lines 1-15: "The support pads 80 and 81 are connected to adjustable arms 86 and 87 by swivel connectors 82 and 83 that are preferably constructed as ball and socket type connectors 84 and 85. The adjustable arms 86 and 87 preferably include external shafts 88 and 89 slidably received over and operably connected to internal shafts 98 and 99. The external shafts 88 and 89 are preferably operably connected to the internal shafts 98 and 99 via a ratchet lever mechanism (not shown). The internal shafts 98 and 99 of the adjustable arms 86 and 87 are further connected to lock positioners 90 and 91. The lock positioners 90 and 91, which are attached to the torque bases 32 and 33, comprise a ratchet or a wrap spring type mechanism (not shown) or, alternatively, comprise opposing face gears 94 and 96, 95 and 97. Tabs 92 and 93 rotate and cooperate with cammed or serrated surfaces 36 and 37 on the outer face of the outer face gears 94 and 95 to engage and disengage the opposing face gears 94 and 96, 95 and 97. Thus, when the tabs 92 and 93 are rotated to disengage the face gears 94 and 96, 95 and 97, the support pads 80 and 81 can be rotated to a desired position. Once the support pads 80 and 81 are in position, the tabs 92 and 93 are rotated to engage the face gears 94 and 96, 95 and 97 and, thus, lock the support pads 80 and 81 in place;"
	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"

Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
a locking member for locking the shoe and the spreader member in a selected relative position; and	See, e.g., Page 17, lines 1-15: "The support pads 80 and 81 are connected to adjustable arms 86 and 87 by swivel connectors 82 and 83 that are preferably constructed as ball and socket type connectors 84 and 85. The adjustable arms 86 and 87 preferably include external shafts 88 and 89 slidably received over and operably connected to internal shafts 98 and 99. The external shafts 88 and 89 are preferably operably connected to the internal shafts 98 and 99 via a ratchet lever mechanism (not shown). The internal shafts 98 and 99 of the adjustable arms 86 and 87 are further connected to lock positioners 90 and 91. The lock positioners 90 and 91, which are attached to the torque bases 32 and 33, comprise a ratchet or a wrap spring type mechanism (not shown) or, alternatively, comprise opposing face gears 94 and 96, 95 and 97. Tabs 92 and 93 rotate and cooperate with cammed or serrated surfaces 36 and 37 on the outer face of the outer face gears 94 and 95 to engage and disengage the opposing face gears 94 and 96, 95 and 97. Thus, when the tabs 92 and 93 are rotated to disengage the face gears 94 and 96, 95 and 97, the support pads 80 and 81 can be rotated to a desired position. Once the support pads 80 and 81 are in position, the tabs 92 and 93 are rotated to engage the face gears 94 and 96, 95 and 97 and, thus, lock the support pads 80 and 81 in place;"
	Page 25, lines 5-6: "The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"

Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"

Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs.

To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642.

The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"
	Page 45, lines 11-19: "The access platform 700 incorporates an offset positioning assembly 717 that comprises a pawl 719 pivotally mounted in a recess 723 of the pad arm 715 at a pivot 722 and a ratchet 718 formed on the upper end of the blade arm 711. The pawl 719 includes a pawl nose 721 that engages the ratchet 718 and a pawl lever 720 that is depressed to pivot the pawl 719 about pivot 722 to disengage the pawl nose 721 from the ratchet 718. With the pawl nose 721 engaged, the pad arm 715 can only rotate in a clockwise direction relative to the blade arm 711. The pawl 719 prevents the hub 716 of the arm 715 from rotating in a counterclockwise direction relative to the blade arm 711. With the pawl nose 721 disengaged from the ratchet 718, the pad arm 715 can freely rotate relative to the blade arm 711 in a counterclockwise direction."
a drive member for moving said at least one retractor blade with respect to the other retractor blade along the first axis.	See, e.g., Page 15, lines 13-21: "Turning to Figure 3, the harmonic gear drive 20 comprises ring gears 21 and 22, a pinion 24, idler gears 26 and 27, and a drive hub 28. The ring gears 21 and 22 are formed on the inner walls of the upper and lower hub halves 17 and 16, respectively. The idler gears 26 and 27 are operably connected to the pinion 24 and ring gears 21 and 22. Preferably, the effective gear ratios between the ring gears 21 and 22 are in the range of about 20-40:1, and the gear ratio between the pinion 24 and the ring gears 21 and 22 are in the range of about 3-5:1. Thus, only a relatively low torque is needed to turn the drive hub 28, which is connected to the pinion 24, to drive the ring gears 21 and 22 at a relatively high torque to rotate the upper hub 17 relative to the lower hub 16 to spread the spreader arms 18 and 19 and a patient's ribs apart;"
	Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

	Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 45, lines 1-4: " A drive block 708 coupled to the drive mechanism 970 in the spreader housing 702, extends outwardly from the spreader housing 702 in a normal direction to the housing 702. As the lever 701 is rotated, the drive mechanism 970 slidably carries the drive block 708 along the drive slot 703 of the spreader housing 702."
11. The retractor of claim 10, wherein the spreader member comprises an elongated member and the first and second retractor blades are respectively coupled to first and second arms coupled to the elongated member, one of said arms being movable with respect to the elongated member along the first axis, the shoe being movable relative to the elongated member in a manner which is transverse to the first axis.	See, e.g., Figures 13-15, 22, 31-32, 33-34;
	Page 24, lines 8-11: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120;"

Page 24, line 13-Page 25, line 7: " Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155.

The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145.

Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"

Page 25, line 20-Page 26, line 2: "After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"

Page 40, lines 1-19: "Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613.

A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"

Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs.

To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642.

The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

	Page 43, line 3-Page 44, line 21: "The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642. The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624. Further adjustment of an offset height of the superior blades 652 may be obtained by first loosening the moveable pivot lock 626 around the stem 646 of the blade arm 642 and then adjusting the adjustable offset drive screw 636 to cause the shoe 680 and the shoe arm 682 to rotate downwardly in a clockwise direction relative to the superior blade 652 and, thus, cause the blade 652 that is interconnected to the moveable pivot 624 to rise vertically until a desired offset is achieved. Alternatively, the blade arm 642 would remain fixed to the shoe arm 682 as the offset drive screw 636 is adjusted to cause the shoe 680 and shoe arm 682 to rotate downwardly in a clockwise direction. The clockwise rotation of the shoe 680 and shoe arm 682 causes the blade 652 to rotate upwardly in a clockwise direction;"
	Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."

	Page 45, lines 11-19: "The access platform 700 incorporates an offset positioning assembly 717 that comprises a pawl 719 pivotally mounted in a recess 723 of the pad arm 715 at a pivot 722 and a ratchet 718 formed on the upper end of the blade arm 711. The pawl 719 includes a pawl nose 721 that engages the ratchet 718 and a pawl lever 720 that is depressed to pivot the pawl 719 about pivot 722 to disengage the pawl nose 721 from the ratchet 718. With the pawl nose 721 engaged, the pad arm 715 can only rotate in a clockwise direction relative to the blade arm 711. The pawl 719 prevents the hub 716 of the arm 715 from rotating in a counterclockwise direction relative to the blade arm 711. With the pawl nose 721 disengaged from the ratchet 718, the pad arm 715 can freely rotate relative to the blade arm 711 in a counterclockwise direction."
12. The retractor of claim 10, wherein the second blade is rotatable about a second axis which is transverse to the first axis, the shoe being coupled to the second blade so that the shoe and the second blade rotate together about the second axis.	See, e.g., Figures 1-2, 22, 31-32, and 33-34; Page 17, lines 16-21: " The torsional members 30 and 31 preferably comprise a reduction gear assembly 40 (see Figure 4). The reduction gear assembly 40, as shown for torsional member 31, comprises a drive nut 42 rotatably captured on the end of the shaft of the spreader arm 19, a first shaft 45 axially extending from the spreader arm 19, and a second shaft 47 extending from the torque base 33. The second shaft 47 is rotatably captured over the first shaft 45 by a shoulder screw 49;" Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"

Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs.

To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642.

The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"

Page 43, line 3-Page 44, line 21: "The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642. The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624. Further adjustment of an offset height of the superior blades 652 may be obtained by first loosening the moveable pivot lock 626 around the stem 646 of the blade arm 642 and then adjusting the adjustable offset drive screw 636 to cause the shoe 680 and the shoe arm 682 to rotate downwardly in a clockwise direction relative to the superior blade 652 and, thus, cause the blade 652 that is interconnected to the moveable pivot 624 to rise vertically until a desired offset is achieved. Alternatively, the blade arm 642 would remain fixed to the shoe arm 682 as the offset drive screw 636 is adjusted to cause the shoe 680 and shoe arm 682 to rotate downwardly in a clockwise direction. The clockwise rotation of the shoe 680 and shoe arm 682 causes the blade 652 to rotate upwardly in a clockwise direction;"
Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"
Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."

	Page 45, lines 11-19: "The access platform 700 incorporates an offset positioning assembly 717 that comprises a pawl 719 pivotally mounted in a recess 723 of the pad arm 715 at a pivot 722 and a ratchet 718 formed on the upper end of the blade arm 711. The pawl 719 includes a pawl nose 721 that engages the ratchet 718 and a pawl lever 720 that is depressed to pivot the pawl 719 about pivot 722 to disengage the pawl nose 721 from the ratchet 718. With the pawl nose 721 engaged, the pad arm 715 can only rotate in a clockwise direction relative to the blade arm 711. The pawl 719 prevents the hub 716 of the arm 715 from rotating in a counterclockwise direction relative to the blade arm 711. With the pawl nose 721 disengaged from the ratchet 718, the pad arm 715 can freely rotate relative to the blade arm 711 in a counterclockwise direction."
13. A method of retracting a portion of a patient's body to carry out a surgical procedure, the method comprising steps of:	See, e.g., Figures 1-2, 13-15, 22, 31-32, and 33-34.
positioning first and second retractor blades against opposite sides of an incision formed in a patient's body, the first and second retractor blades being coupled to a spreader member so as to be relatively movable toward or away from each other along a first axis;.	See, e.g., Page 14, line 22-Page 14, line 1: " Preferably, the access platform 10 comprises a pair of blades 50 and 51, a pair of support pads 80 and 81, a pair of tissue retractors 70 and 71, a pair of torsional members 30 and 31, and a spreader member 12;" Page 16, lines 9-22: "Referring to Figure 2, the blades 50 and 51 preferably include elongated vanes 52 and 53, which slide beneath a plurality of the patient's ribs, and recessed arcuate throats 54 and 55 that receive the patient's ribs that are adjacent to the chest incision. The benefits of the recessed throats 54 and 55 and the elongated vanes 52 and 53 will be discussed below with regard to the operation of the access platform 10. Blade arms 56 and 57 interconnect the blades 50 and 51 to the rest of the access platform 10. The blade arms 56 and 57 comprise stems 62 and 63 received in sockets 34 and 35 in torque bases 32 and 33. The sockets 34 and 35 and the stems 62 and 63 are constructed such that the blade arms 56 and 57 are releasably connected to the torque bases 32 and 33. The stems 62 and 63, which extend relatively horizontally from the torque bases 32 and 33, include pivot sections 60 and 61 extending therefrom. Branches 58 and 59 extend outwardly and downwardly away from the pivot sections 60 and 61 and are attached to the throats 54 and 55 of the blades 50 and 51. This blade arm construction advantageously directs the bulk of the access platform 10 away from the surgeon's working area;"

	Page 22, lines 10-18: "In operation, the blades 50 and 51 are positioned within the incision in the patient's chest such that the vanes 52 and 53 slide under the patient's ribs R (see Figs. 6 and 7). The throats 54 and 55 of the blades 50 and 51 receive and substantially surround opposing ribs adjacent to the incision in the patient's chest. Once the blades 50 and 51 are in position, the blades 50 and 51 are connected to the rest of the access platform 10 by inserting the stems 62 and 63 (see Figure 2) of the blade arms 56 and 57 into the sockets 34 and 35 in the torque bases 32 and 33. Next, the hub 14 of the spreader member 12 is rotated to laterally spread the spreader arms 18 and 19 apart until the blades 50 and 51 have retracted the patient's ribs R to a desired spacing;"
	Page 24, line 8-Page 25, line 2: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126. Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
Page 42, line 15-Page 43, line 2: " In operation, the blades 650 and 652 are inserted in an incision in the patient's chest such that the elongated vanes 656 and 657 of the blade 652 are positioned under the patient's ribs while the recessed throats 653 and 654 of the blades 650 and 652 are positioned to receive the ribs that are adjacent to the incision. After the blades 650 and 652 are properly positioned, the stem 644 of the blade arm 640 is inserted through the fixed pivot lock 615 into the socket 618 of the fixed pivot 616. Meanwhile, the stem 646 of the blade arm 642 is inserted through the moveable pivot lock 626 and the end of the shoe arm 682 opposite the shoe 680, and into the socket 625 of the moveable pivot 624. The blade 650 is then fixed in position by tightening the fixed pivot lock screw 617 to tighten the fixed pivot lock 615 around the stem 644 of the blade arm 640;"

	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
	Page 45, line 20-Page 46, line 9: " In operation, with the superior blade 712 and sternal pad 714 assembly separated from the rest of the access platform 700, the superior blade 712 and sternal pad 714 assembly is positioned on the patient's chest. Initially the angle between the blade and pad arms 711 and 715 is large or nearly flat. The superior blade 712 is then inserted into an incision in the patient's chest wall and slid under the superior ribs adjacent to the incision. With the superior blade 712 properly positioned within the incision, the sternal pad 714 is adjusted downwardly on top of the patient's chest wall by rotating the pad arm 715 relative to the blade arm 711 in a clockwise direction to decrease the angle between the pad arm 715 and blade arm 711. Next, the rest of the access platform 700 with the inferior blade 706 attached, is aligned on the patient's chest. The inferior blade 706 is then inserted into the incision in the patient's chest. The blade arm 711 and pad arm 715 assembly is then rotatably mounted on the shaft 710. The access platform 700 is now fully assembled and the blades 706 and 712 are in parallel alignment."
coupling at least one shoe to the spreader member so as to be adjustable with respect to the spreader member in a manner which is transverse to the first axis, the shoe having a support surface configured to rest against a surface of the patient's body adjacent the incision;	See, e.g., Page 14, line 22-Page 14, line 1: " Preferably, the access platform 10 comprises a pair of blades 50 and 51, a pair of support pads 80 and 81, a pair of tissue retractors 70 and 71, a pair of torsional members 30 and 31, and a spreader member 12;"

Page 17, lines 1-15: "The support pads 80 and 81 are connected to adjustable arms 86 and 87 by swivel connectors 82 and 83 that are preferably constructed as ball and socket type connectors 84 and 85. The adjustable arms 86 and 87 preferably include external shafts 88 and 89 slidably received over and operably connected to internal shafts 98 and 99. The external shafts 88 and 89 are preferably operably connected to the internal shafts 98 and 99 via a ratchet lever mechanism (not shown). The internal shafts 98 and 99 of the adjustable arms 86 and 87 are further connected to lock positioners 90 and 91. The lock positioners 90 and 91, which are attached to the torque bases 32 and 33, comprise a ratchet or a wrap spring type mechanism (not shown) or, alternatively, comprise opposing face gears 94 and 96, 95 and 97. Tabs 92 and 93 rotate and cooperate with cammed or serrated surfaces 36 and 37 on the outer face of the outer face gears 94 and 95 to engage and disengage the opposing face gears 94 and 96, 95 and 97. Thus, when the tabs 92 and 93 are rotated to disengage the face gears 94 and 96, 95 and 97, the support pads 80 and 81 can be rotated to a desired position. Once the support pads 80 and 81 are in position, the tabs 92 and 93 are rotated to engage the face gears 94 and 96, 95 and 97 and, thus, lock the support pads 80 and 81 in place;"
Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"
Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"

Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
Page 42, line 42-Page 43, line 4: "Meanwhile, the stem 646 of the blade arm 642 is inserted through the moveable pivot lock 626 and the end of the shoe arm 682 opposite the shoe 680, and into the socket 625 of the moveable pivot 624. The blade 650 is then fixed in position by tightening the fixed pivot lock screw 617 to tighten the fixed pivot lock 615 around the stem 644 of the blade arm 640. The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved;"
Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."

	Page 46, lines 5-9: "Next, the rest of the access platform 700 with the inferior blade 706 attached, is aligned on the patient's chest. The inferior blade 706 is then inserted into the incision in the patient's chest. The blade arm 711 and pad arm 715 assembly is then rotatably mounted on the shaft 710. The access platform 700 is now fully assembled and the blades 706 and 712 are in parallel alignment."
adjusting the relative position of the shoe with respect to the spreader member and fixing the shoe in a position at which the support surface of the shoe rests against the surface of the patient's body adjacent the incision; and	See, e.g., Page 22, lines 18-19: "Next, the rest of the access platform 700 with the inferior blade 706 attached, is aligned on the patient's chest. The inferior blade 706 is then inserted into the incision in the patient's chest. The blade arm 711 and pad arm 715 assembly is then rotatably mounted on the shaft 710. The access platform 700 is now fully assembled and the blades 706 and 712 are in parallel alignment;"
	Page 26, lines 2-4: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum;"
	Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;".
	Page 46, lines 1-4: " With the superior blade 712 properly positioned within the incision, the sternal pad 714 is adjusted downwardly on top of the patient's chest wall by rotating the pad arm 715 relative to the blade arm 711 in a clockwise direction to decrease the angle between the pad arm 715 and blade arm 711."

imparting relative movement to the first and second blades to simultaneously move the blades apart along the first axis and lift one side of the incision with respect to the other side of the incision.	See, e.g., Page 22, lines 16-21: "Next, the hub 14 of the spreader member 12 is rotated to laterally spread the spreader arms 18 and 19 apart until the blades 50 and 51 have retracted the patient's ribs R to a desired spacing. The support pads 80 and 81 are then lowered to rest on the patient's chest and locked in place with lock positioners 90 and 91. At this point, the torque bases 32 and 33 are rotated relative to the torsional members 30 and 31 to displace in an essentially vertical direction the blades 50 and 51, and ultimately the patient's ribs R, relative to each other;"
	Page 25, line 20-Page 26, line 9: "After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs. When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"
	Page 31, lines 4-15: " A sixth embodiment of the access platform 310 is shown in Figure 22 to comprise a combination of components from the first and fourth embodiments (Figures 2 and 18). More particularly, the torsional members 30 and 31 of the first embodiment are interposed between and operably connected to the fingers 330A and 330B and the housing 322, and interposed between and operably connected to the fingers 332A and 332B and the spreader base 328, respectively. In addition, the support pads 80 and 81 of the first embodiment are adjustably attached to the fingers 330A and 330B, 332A and 332B. By including the torsional members 30 and 31 and the support pads 80 and 81, second and third axes of rotation A_2 and A_3 are provided. Thus, as in the first embodiment, the torsional members 30 and 31 enable the access platform 310 to vertically displace the blades 350 and 352 and the retracted ribs. To vertically displace the blades 350 and 352, the blade arms 338 and 340 are fixedly coupled to the fingers 330A and 330B, 332A and 332B by pins 334 and 336;"
	Page 43, lines 7-12: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized. Because the movable pivot 624 is advantageously located above the blade 652, the superior blade 652 naturally raises vertically as it rotates about the moveable pivot 624 as a spreading force from the inferior blade 650 is transmitted to the superior blade 652 through the movable pivot 624;"

	Page 46, lines 10-15: " The handle 701 is rotated to spread the blades 706 and 712. Because the shaft 710 is located above the superior blade 712 and because the superior blade 712 and sternal pad 714 assembly pivots freely around the shaft 710 a lifting of the superior blade 712 and ribs naturally occurs as the blades 706 and 712 are separated. The spreading force from the inferior blade 706 is transmitted to the superior blade 712 through the shaft 710 located above the superior blade 712."
14. A rib retractor for spreading apart first and second ribs to create and opening in the patient's chest, comprising:	See, e.g., Figures 13-15, 31-32 and 33-34.
a spreader;	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
	Page 44, line 16-Page 45, line 4: " A fifteenth embodiment of an access platform 700 of the present invention, as shown in Figures 33 and 34, comprises an elongated spreader housing 702 with a block and tackle type drive mechanism 970 located therein (see Figures 35-38 discussed in detail below). A lever 701 interconnected to the drive mechanism 970 extends upwardly from the spreader housing 702. A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706. The inferior blade 706 includes a tissue retractor 707 extending therefrom. A drive block 708 coupled to the drive mechanism 970 in the spreader housing 702, extends outwardly from the spreader housing 702 in a normal direction to the housing 702. As the lever 701 is rotated, the drive mechanism 970 slidably carries the drive block 708 along the drive slot 703 of the spreader housing 702."

a first blade coupled to the spreader;	See, e.g., Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"

a second blade coupled to the spreader, the second blade being movable toward and away from the first blade, the second blade having a rotatable connector which permits rotation of the second blade relative to the spreader;	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"

	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
a drive member for moving at least one of the first and second blades toward the other of the first and second blades;	See, e.g., Page 24, lines 8-12: " A second embodiment of the access platform 110 is shown in Figures 13, 14 and 15. The second embodiment of the access platform 110 includes a spreader member 112 preferably comprising a horizontally disposed rack 120 and pinion housings 121 and 122 slidably disposed over the rack 120. The pinion housings 121 and 122 rotatably retain pinions 123 and 124 driven by levers 125 and 126;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
	Page 40, lines 1-5: " Referring to Figures 31 and 32, a fourteenth embodiment of the access platform 610 of the present invention comprises a spreader component 612 that includes a rack 613, a spreader base 614 attached to one end of the rack 613 and a pinion housing 620 slidably received over the rack 613. A pinion 621 that is driven by a lever 622 is rotatably retained in the pinion housing 620 and operably connected to the rack 613;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 45, lines 1-4: " A drive block 708 coupled to the drive mechanism 970 in the spreader housing 702, extends outwardly from the spreader housing 702 in a normal direction to the housing 702. As the lever 701 is rotated, the drive mechanism 970 slidably carries the drive block 708 along the drive slot 703 of the spreader housing 702."
a shoe coupled to at least one of the spreader and the first and second blades, the shoe having a support surface configured to engage the surface of the patient's chest when lifting the second rib with the second blade; and	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"

Page 26, lines 2-9: "When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"
Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"

	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
a locking member which selectively permits and prevents rotation of the rotatable connector, the locking member being movable between first and second positions, the locking member being in the first position for spreading the first and second ribs apart without lifting the second rib, the locking member being in the second position for spreading the first and second ribs apart and lifting the second rib.	See, e.g., Figures 13-15; The rack (132 and 133) and pinion (136 and 137) configuration inherently acts as a locking mechanism; Page 25, line 18-Page 26, line 9: In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs. When a desired spacing between the retracted ribs is met, the support pads 160 and 161 are positioned on the chest of the patient, with support pad 160 being preferably positioned on the patient's sternum. The levers 138 and 139 are then rotated to drive the pinions 136 and 137 to draw the curved racks 132 and 133 through the pinion housing 134 and 135 to vertically displace the blades 140 and 141 and the retracted ribs. As the blade 140 is retracted upwards the support pad 160 preferably depresses the sternum creating a greater deflection in the patient's rib cage and, thus, creating a greater "tunnel" effect underneath the patient's rib cage, to increase the surgeon's working space and visual access for dissection of the IMA;"

	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"
	Page 45, lines 11-19: "The access platform 700 incorporates an offset positioning assembly 717 that comprises a pawl 719 pivotally mounted in a recess 723 of the pad arm 715 at a pivot 722 and a ratchet 718 formed on the upper end of the blade arm 711. The pawl 719 includes a pawl nose 721 that engages the ratchet 718 and a pawl lever 720 that is depressed to pivot the pawl 719 about pivot 722 to disengage the pawl nose 721 from the ratchet 718. With the pawl nose 721 engaged, the pad arm 715 can only rotate in a clockwise direction relative to the blade arm 711. The pawl 719 prevents the hub 716 of the arm 715 from rotating in a counterclockwise direction relative to the blade arm 711. With the pawl nose 721 disengaged from the ratchet 718, the pad arm 715 can freely rotate relative to the blade arm 711 in a counterclockwise direction."

15. The rib retractor of claim 14, wherein:	See, e.g., Figures 13-15, and 31-32.
the shoe is movable relative to the spreader; and	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"

the rib retractor also comprises a second locking member selectively permitting and preventing linear movement of the shoe relative to the spreader.	Page 25, lines 3-7: " Preferably, one end of the horizontally disposed rack 120 is connected to a slide 172 of a lock positioner 171. The slide 172 is slidably received over a vertically disposed support pad stanchion 167. The stanchion 167 has ratchet gear teeth 173 formed thereon which cooperate with a pawl 174 attached to the slide 172 to adjustably position the support pad 161. The support pad 161 is adjustably connected to the stanchion 167 by a swivel connector 163;"
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"

16. The rib retractor of claim 14, wherein: the shoe is coupled to the second blade so that the shoe and the second blade are rotatable together.	See, e.g., Figures 31-32 and 33-34.
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."

17. The rib retractor of claim 14, wherein: the spreader has a first arm and a second arm, the first blade being attached to the first arm and the second blade being attached to the second arm.	See, e.g., Figures 13-15, 31-32, and 33-34;
	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"
	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"

	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."
18. The rib retractor of claim 17, wherein: the spreader includes an elongate member, the first and second arms being mounted to the elongate member, the second arm being movable along the elongate member toward and away from the first arm along a first axis.	See, e.g., Figures 13-15, 31-32, and 33-34;
	Page 24, line 13-Page 25, line 2: "Vertical displacement members 130 and 131 preferably comprise curved racks 132 and 133 slidably received within pinion housings 134 and 135. The pinion housings 134 and 135 are fixedly attached to the pinion housings 122 and 121. The pinion housings 134 and 135 rotatably retain pinions 136 and 137 driven by levers 138 and 139. Sockets 154 and 155 are formed in the lower ends of the curved racks 132 and 133. Stems 152 and 153 of blade arms 146 and 147 are releasably received by and horizontally extend from the sockets 154 and 155. The blade arms 146 and 147 further comprise pivot sections 150 and 151 extending horizontally from the stems 152 and 153. Branches 148 and 149 extend downwardly and outwardly from the pivot sections 150 and 151 of the blade arms 146 and 147 to position the remainder of the access platform 110 away from the surgeon's working area. Branches 148 and 149 attach to blades 140 and 141. The blades 140 and 141 comprise elongated vane sections 142 and 143 extending outwardly from recessed throat sections 144 and 145;"
	Page 25, line 18-Page 26, line 2: "In operation, the blades 140 and 141 are inserted in an incision in the patient's chest such that the blade vanes 142 and 143 slide under the patient's ribs and the recessed throats 144 and 145 of the blades 140 and 141 capture the ribs that are adjacent to the incision. After the blades 140 and 141 are properly positioned, the stems 152 and 153 of the blade arms 146 and 147 are inserted into the sockets 154 and 155 of the vertical displacement members 130 and 131 to connect the blades 140 and 141 to the remainder of the access platform 110. The levers 125 and 126 are then rotated to drive the pinions 121 and 122 over the rack 120 to laterally retract the ribs;"

	Page 40, lines 6-19: "A fixed pivot 616 having a socket 618 formed therein, extends from the spreader base 614. A fixed pivot lock 615 with a lock screw 617 is fixedly connected to the fixed pivot 616. A moveable pivot 624 having a socket 625 formed therein, extends from the housing 620. Rotatably and releasably received in and extending from the sockets 618 and 625 are stem portions 644 and 646 of a pair of blade arms 640 and 642, respectively. The stem 644 that is received in the socket 618 of the fixed pivot 616 includes a stop 645 formed on its exterior to abut the fixed pivot lock 615 and stop the travel of the stem 644. Branch portions 641 and 643 of the blade arms 640 and 642 extend downwardly from the stem portions 644 and 646 and attach to inferior and superior blades 650 and 652, respectively. The superior blade 652 which is advantageously located below and interconnected to the moveable pivot 624, comprises a recessed throat 654 to capture a rib adjacent to an incision in the patient's chest cavity and a pair of elongated vanes 656 and 657 used to offset a plurality of the patient's ribs. The inferior blade 650 which is interconnected to the fixed pivot 616 comprises a recessed throat 653 used to capture a rib adjacent to an incision in the patient's chest cavity;"
	Page 43, lines 7-8: " The ribs are then separated and simultaneously offset by rotating the lever 622 to drive the pinion 621 along the rack 613 until a desired opening width is realized;"
	Page 44, lines 19-22: " A blade arm 705 connected to an inferior blade 706 is mounted to a base 704 fixedly received in the housing 702. The blade arm 705 extends outwardly and then downwardly from the spreader housing 702 to the inferior blade 706;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."

19. The rib retractor of claim 14, wherein: the locking member may be moved from a locked position to an unlocked position without removing the first and second blades from the opening in the patient's chest.	See, e.g., Figures 13-15, 31-32, and 33-34;
	Page 41, line 3-Page 42, line 2: "The branch portion 643 of the blade arm 642 that is interconnected to the moveable pivot 624 extends higher vertically than the branch portion 641 of the blade arm 640 that is interconnected to the fixed pivot 616 when the blades 650 and 652 are substantially level (see Figure 29). This construction tends to increase the moment about the moveable pivot 624 caused by the offset of the movable pivot from the center-of-effort of the spreading force at the blades 650 and 652. Because the movable pivot 624 is located above the superior blade 652, a lifting force is naturally exerted on the superior blade 652 and ribs as spreading occurs. To add additional offset of the superior blade 652 once the blades 650 and 652 are separated and offset, a vertical displacement component 630 is included on the access platform 610. The vertical displacement component 630 comprises a rib compression shoe 680, a substantially "S" shaped shoe arm 682 connected to the shoe 680 at one end and pivotally connected to the stem 646 of the blade arm 642 at the other end, and an adjustable offset link 632 connected to the pinion housing 620 and operably connected to the shoe arm 682 and shoe 680. The shoe 680 has an arcuate front profile and a rectangular top profile. A moveable pivot lock 626 with a lock screw 627 is fixedly mounted to the end of the shoe arm 682. The movable pivot lock 626 fixes the shoe arm 682 relative to the blade arm 642. The offset link 632 comprises a substantially "L" shaped base 631 that extends from the pinion housing 620 at one end and terminates at the other end in a pair of parallel spaced and arcuate shaped fingers 633 and 634. A bushing 635 having a hole tapped through its center perpendicular to the bushing's 635 longitudinal axis, is rotatably captured by the fingers 633 and 634. An adjustable offset drive screw 636 is threaded through the hole in the bushing 635 and is operably connected to the shoe arm 682;"
	Page 43, lines 3-7: " The rib compression shoe 680 is then adjusted downwardly by adjusting the adjustable offset drive screw 636 until the desired compression of the ribs is achieved. The blade 652 that is interconnected to the moveable pivot 624 is then fixed in position relative to the shoe 680 by tightening the moveable pivot lock screw 627 to tighten the moveable pivot lock 626 around the stem 646 of the blade arm 642;"
	Page 45, lines 5-10: " A blade arm 711 is attached at its lower end to a superior blade 712 with a tissue retractor 713 extending therefrom. At its upper end, the blade arm 711 is rotatably coupled to an upper end of an elongated arcuate pad arm 715. The pad arm 715 is attached at its lower end to a sternal pad 714. The upper end of the pad arm 715 forms a forked hub 716. The blade arm 711, pad arm 715 and sternal pad 714 assembly is releasably and rotatably mounted on a cylindrical shaft 710 attached to the drive block 708."